Access DB# 76586

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Carrie S. Thompson Examiner #: 79241 Date: 9/26/02
Art Unit: 1774 Phone Number 305 4488 Serial Number: 09/867,449
Mail Box and Bldg/Room Location: CP3 11/B28 Results Format Preferred (circle): PAPER DISK E-MAIL

If mor than one search is submitted, please prioritize searches in order of need.

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Blue electroluminescence compound for an organic EL device + an organic EL device

Inventors (please provide full names): See attached

Earliest Priority Filing Date: 10/17/2000

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Please do a search and a CAS search for the formula in claim 1 where Ar is anthracene.

Please do a search and a CAS search for the formula in claim 5 where Ar is anthracene.

Please search organic EL device using spirobifluorene compounds.

Thanks.

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STAFF USE ONLY	Type of Search		Vendors and cost where applicable	
Searcher: EL	NA Sequence (#)		STN	$160.37
Searcher Phone #:	AA Sequence (#)		Dialog	
Searcher Location:	Structure (#)	✓ (2)	Questel/Orbit	
Date Searcher Picked Up:	Bibliographic		Dr.Link	
Date Completed: 9-27-02	Litigation		Lexis/Nexis	
Searcher Prep & Review Time: 5	Fulltext		Sequence Systems	
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Online Time: 60	Other		Other (specify)	

PTO-1590 (8-01)

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Property values tagged with IC are from the ZIC/VINITI data file
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STRUCTURE FILE UPDATES:   26 SEP 2002  HIGHEST RN 455874-53-0
DICTIONARY FILE UPDATES:  26 SEP 2002  HIGHEST RN 455874-53-0

TSCA INFORMATION NOW CURRENT THROUGH MAY 20, 2002

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

Crossover limits have been increased.  See HELP CROSSOVER for details.

Experimental and calculated property data are now available.  See HELP
PROPERTIES for more information.  See STNote 27, Searching Properties
in the CAS Registry File, for complete details:
http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf

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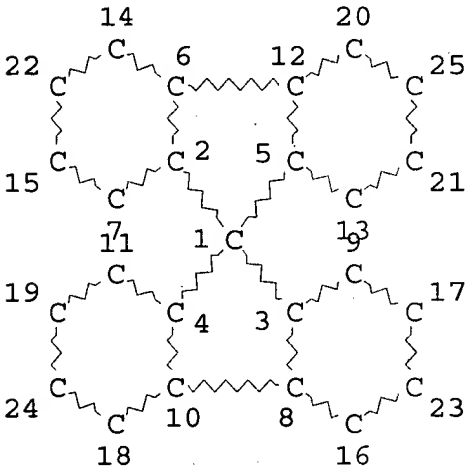

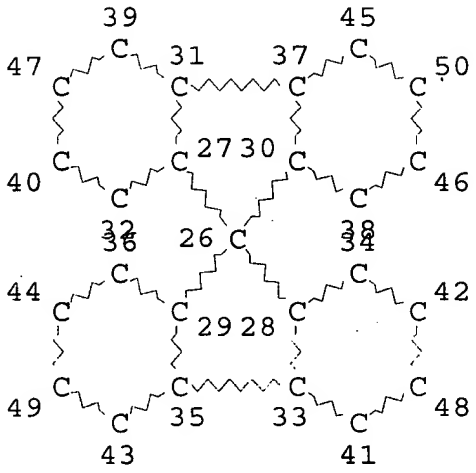

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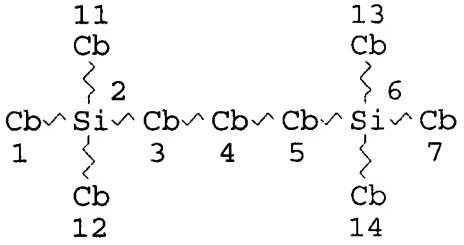

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FILE COVERS 1907 - 27 Sep 2002 VOL 137 ISS 14
FILE LAST UPDATED: 26 Sep 2002 (20020926/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

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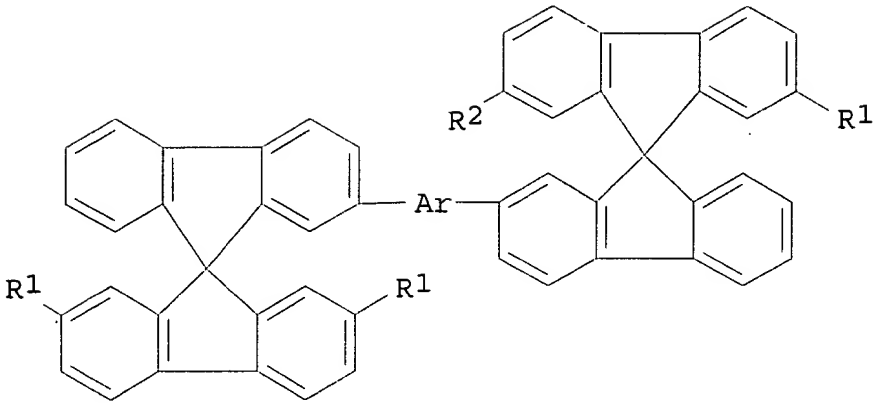
L15 ANSWER 1 OF 1 ZCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2002:313077 ZCAPLUS
DOCUMENT NUMBER: 136:332517
TITLE: Blue phosphors for organic electroluminescent devices
INVENTOR(S): Kim, Sung Han; Yoo, Han Sung; Kwon, Soon Ki; Kim, Yun Hi; Sin, Dong Dhul; Lee, Hyun Uk; Chung, Hyung Chul
PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002121547	A2	20020426	JP 2001-154369	20010523
US 2002055013	A1	20020509	US 2001-862449	20010523

PRIORITY APPLN. INFO.: KR 2000-60968 A 20001017
OTHER SOURCE(S): MARPAT 136:332517
GI

application



Spirobifluorene

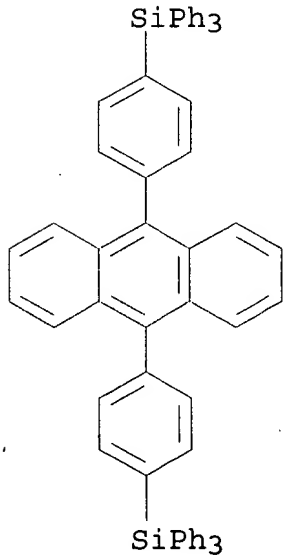
I

AB The phosphors comprise a spirobifluorene deriv. I (Ar = C6-20 aryl, C6-20 aryl having C1-20 alkyl, C6-20 aryl having C1-20 alkoxy; R1,2 = H, C1-20 alkyl, C6-20 aryl having C1-20 alkyl; C6-20 aryl having C1-20 alkoxy).

IT **413627-08-4**
(blue phosphors for org. electroluminescent devices)

RN 413627-08-4 ZCAPLUS

CN Silane, (9,10-anthracenediyldi-4,1-phenylene)bis[triphenyl- (9CI) (CA INDEX NAME)



IT **413627-08-4**
(blue phosphors for org. electroluminescent devices)

=> d l8 1-6 cbib abs hitstr hitrn

L8 ANSWER 1 OF 5 ZCAPLUS COPYRIGHT 2002 ACS
2002:313077 Document No. 136:332517 Blue phosphors for organic electroluminescent devices. Kim, Sung Han; Yoo, Han Sung; Kwon, Soon Ki; Kim, Yun Hi; Sin, Dong Dhul; Lee, Hyun Uk; Chung, Hyung Chul (Samsung Sdi Co., Ltd., S. Korea). Jpn. Kokai Tokkyo Koho JP 2002121547 A2 20020426, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-154369 20010523. PRIORITY: KR 2000-60968 20001017.

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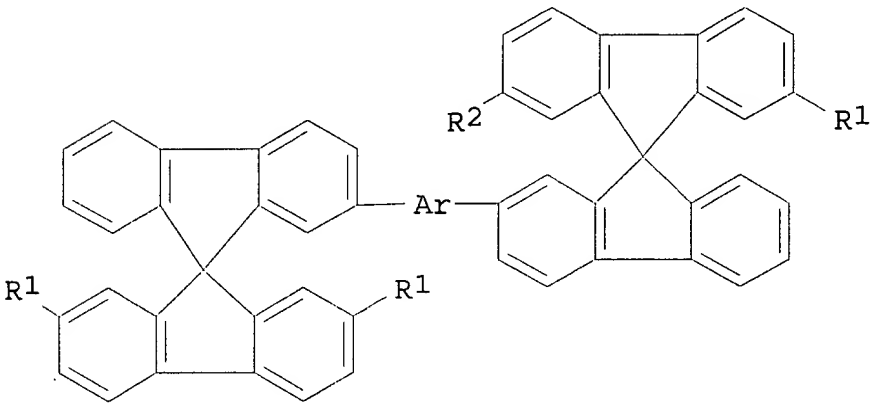


I

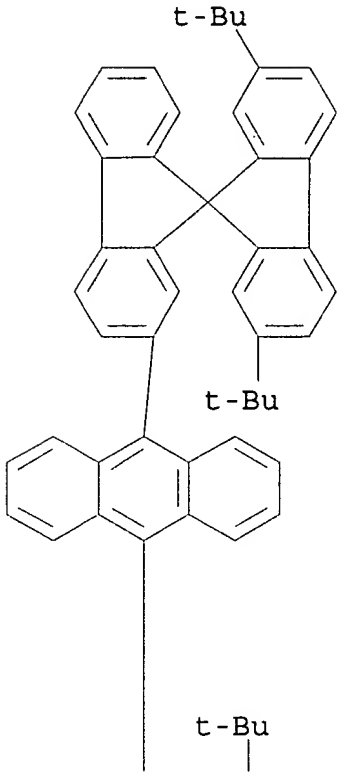
AB The phosphors comprise a spirobifluorene deriv. I (Ar = C6-20 aryl, C6-20 aryl having C1-20 alkyl, C6-20 aryl having C1-20 alkoxy; R1,2 = H, C1-20 alkyl, C6-20 aryl having C1-20 alkyl; C6-20 aryl having C1-20 alkoxy).

IT **393841-79-7**
(blue phosphors for org. electroluminescent devices)

RN 393841-79-7 ZCAPLUS

CN 9,9'-Spirobi[9H-fluorene], 2,2''-(9,10-anthracenediyl)bis[2',7'-bis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

PAGE 1-A



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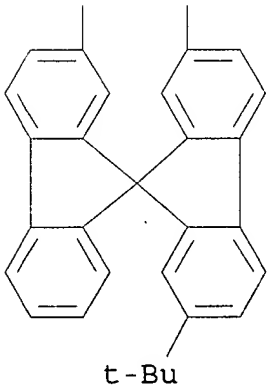

IT **393841-79-7**
(blue phosphors for org. electroluminescent devices)

L8 ANSWER 2 OF 5 ZCAPLUS COPYRIGHT 2002 ACS
2001:880187 Document No. 136:158038 Novel blue emitting material with

high color purity. Kim, Yun-Hi; Shin, Dong-Cheol; Kim, Sung-Han; Ko, Chang-Hee; Yu, Han-Sung; Chae, Yun-Soo; Kwon, Soon-Ki (Department of Polymer Science & Engineering and Research Institute of Industrial Technology, Gyeongsang National University, Jinju, 660-701, S. Korea). Advanced Materials (Weinheim, Germany), 13(22), 1690-1693 (English) 2001. CODEN: ADVMEW. ISSN: 0935-9648. Publisher: Wiley-VCH Verlag GmbH.

AB The synthesis of the novel luminescent material 9,10-bis[(2",7"-di-t-butyl)9',9"-spirobifluorenyl]anthracene (TBSA), and the fabrication and performance of a pure blue-emitting org. electroluminescent device (OELD), which has a non-doping structure for full color devices with TBSA as the emitting material, were described. The devices had the configuration of indium tin oxide (ITO)/ copper phthalocyanine (CuPc)/1,4-bis[(1-naphthylphenyl)amino]biphenyl(a-NPD)/TBSA/tris(8-hydroxyquinoline) aluminum (Alq3)/LiF/Al, where TBSA was used as the emitting layer, CuPc as the hole-injection layer, a-NPD as the hole-transporting layer (HTL), Alq3 as the electron-transporting layer (ETL), and LiF as the electron-injection layer. The low mol. wt., bis(spirobifluorenyl)anthracene presented a stable non-polymeric org. glass with high glass transition temps., usually assocd. with amorphous polymers. High quality amorphous films of this newly synthesized TBSA with high morphol. stability could be prepd. by vapor deposition. With the newly designed non-doped, blue emitting material in a multilayer device structure, it was possible to achieve a luminous efficiency of 1.22 Im/W at a voltage of 7.7 V and brightness of 300 cd/m2. The most important result was the achievement of the purest blue emission nearest to the NTSC std. ever reported.

IT **393841-79-7P**

(novel blue emitting material with high color purity)

RN 393841-79-7 ZCAPLUS

CN 9,9'-Spirobi[9H-fluorene], 2,2''-(9,10-anthracenediyl)bis[2',7'-bis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

Sept. 2001

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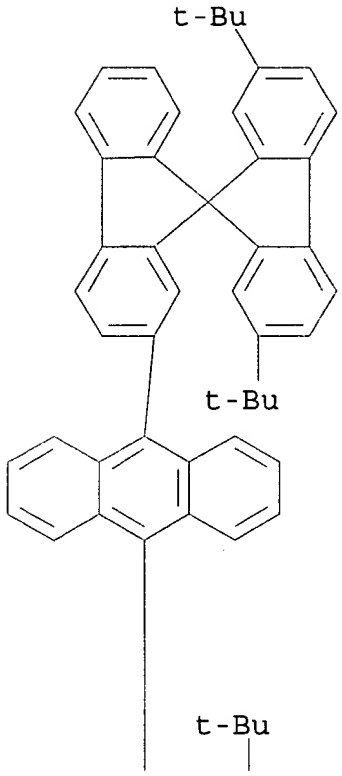

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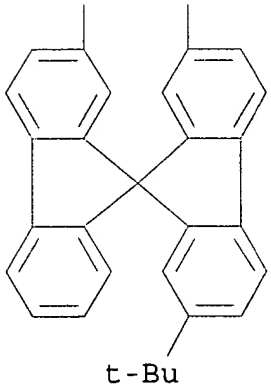

IT **393841-79-7P**
(novel blue emitting material with high color purity)

L8 ANSWER 3 OF 5 ZCAPLUS COPYRIGHT 2002 ACS
1999:655149 Document No. 132:64193 Closely-spaced chelating centers:

synthesis of novel spiro-bridged bis-phenanthrolines and bis-indole derivatives. Wu, Feiyue; Riesgo, Elvira C.; Thummel, Randolph P.; Juris, Alberto; Hissler, Muriel; El-Ghayoury, Abdelkrim; Ziessel, Raymond (Department of Chemistry, University of Houston, Houston, TX, 77204-5641, USA). Tetrahedron Letters, 40(41), 7311-7314 (English) 1999. CODEN: TELEAY. ISSN: 0040-4039. OTHER SOURCES: CASREACT 132:64193. Publisher: Elsevier Science Ltd..

AB The syntheses of novel sol. ditopic 1,10-phenanthroline ligands bearing a central spiro-[5.5]undecane or a spiro-[5.5]bifluorylidene fragment are reported. The synthetic approach is based on a Friedlander condensation between 8-amino-7-quinolinecarboxaldehyde and either 3,9-diketospiro[5.5]undecane or 2,2'-diacetylspiro[5.5]bifluorylidene derivs. Reaction of the latter with phenylhydrazine and subsequent cyclization afforded 2,2'-di-(2"-indolyl)-[5.5]spirobifluorylidene. The photophys. properties of the new compds. are briefly discussed and Ru(II) and Cu(I) complexes were prepd.

IT **253141-17-2P**

(prepn. of spirocyclic bis(phenanthrolines) and bis(indoles))

RN 253141-17-2 ZCAPLUS

CN Ruthenium(5+), (copper)tetrakis(1,10-phenanthroline-.kappa.N1,.kappa.N10)bis[.mu.-[2,2'-(9,9'-spirobi[9H-fluorene]-2,2'-diyl)bis[1,10-phenanthroline-.kappa.N1,.kappa.N10]]]di-, pentakis[hexafluorophosphate(1-)] (9CI) (CA INDEX NAME)

CM 1

CRN 253141-16-1
CMF C146 H88 Cu N16 Ru2
CCI CCS

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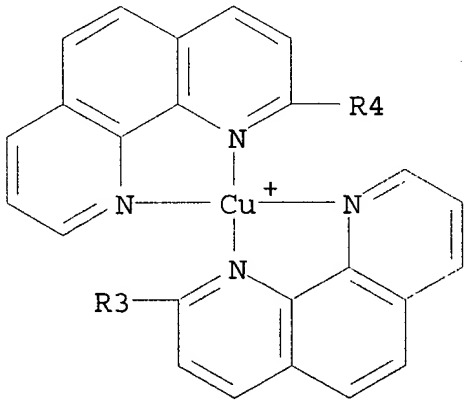

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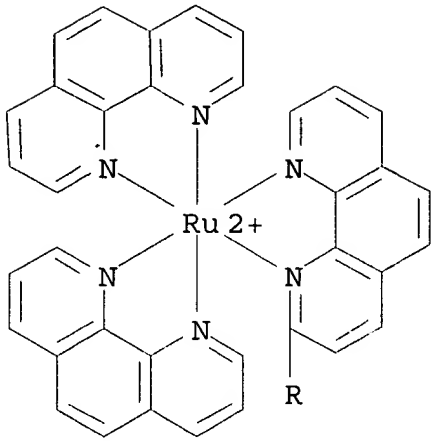

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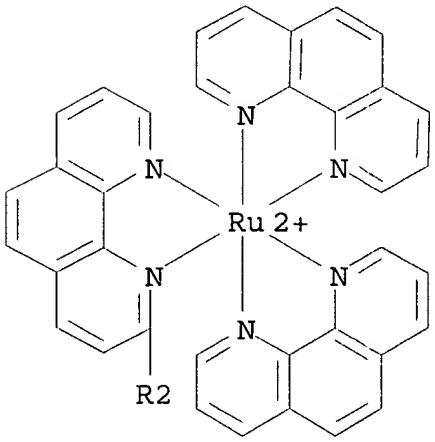

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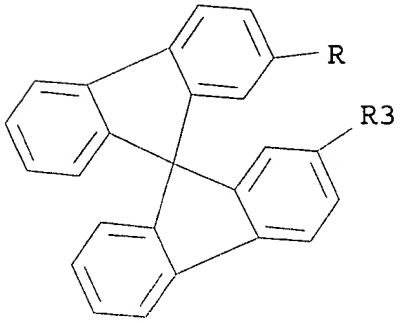

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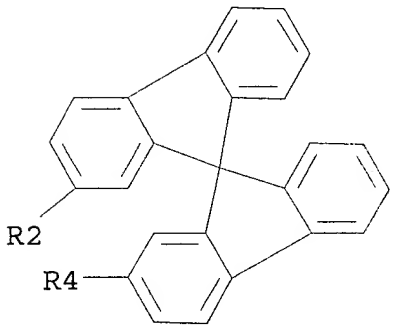

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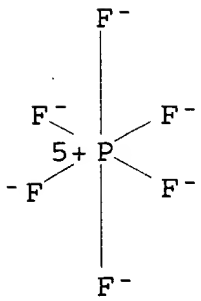


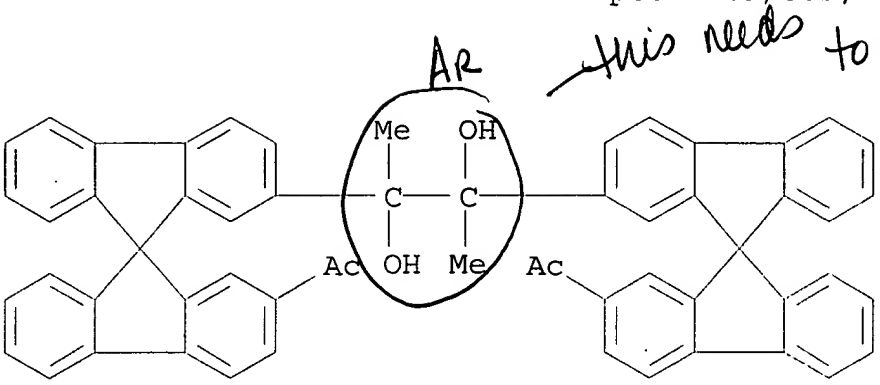
IT **253141-17-2P**
(prepn. of spirocyclic bis(phenanthrolines) and bis(indoles))

L8 ANSWER 4 OF 5 ZCAPLUS COPYRIGHT 2002 ACS
1997:343394 Document No. 127:127809 Electrochemistry of 9,9' spirobifluorene derivatives: electrosynthesis of stereoisomeric 2,3-bis(2'-acetyl-9,9'-spirobifluoren-2-yl)butane-2,3-diols and of 1-(2'-acetyl-9,9'-spirobifluoren-2-yl)ethanol and redox properties of polyacetylated spirobifluorenes. Mattiello, Leonardo; Rampazzo, Liliana (Dep. of ICMMPM, Sede Chimica, Universita di Roma "La Sapienza", Rome, 00161, Italy). Electrochimica Acta, 42(13-14), 2257-2264 (English) 1997. CODEN: ELCAAV. ISSN: 0013-4686. Publisher: Elsevier.

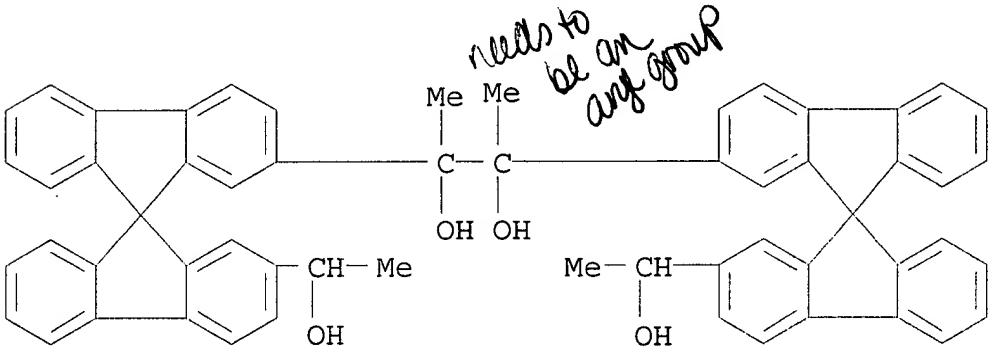
AB 2,2'-Diacetyl-9,9'-spirobifluorene 3a, an axially dissym. compd., when dissolved in virtually aprotic solvent DMF, was characterized by several redn. peaks in the voltammetric expts., using a glassy carbon electrode; the 1st two electron transfers are reversible, with std. potentials E10 = -1.75 V and E20 = -1.90 V vs. SCE resp. A 3rd redn. step occurs with Ep = -2.40 V, at .nu. = 50 mV s-1. The 1st two steps are pertinent to the formation of the anion radical A.bul.- and of the dianion diradical -.bul.A-.bul. of 3a (A), resp. Controlled potential electrolysis of 3a on a rvc (reticulated vitreous carbon) electrode in DMF-Et4NClO4 (0.1M), with acetic acid 1:1 mol 3a/mol acid added, furnishes the two diastereomeric keto-alcs. and the six diastereomeric keto-pinacols. This result was obtained if the electrolysis is stopped after 1 F/mol 3a was passed. If the electrolysis is continued until both C=O groups are reduced, a mixt. of diastereomeric pinacols was obtained. Spectroscopic properties of the diastereomeric keto-pinacols are sensitive to the various spatial arrangements in the isomers. Some aspects of the redox properties of 3a, as related to the spiro-structure of the mol., are also discussed. Redox properties of tri- and tetra-acetylated spirobifluorenes in virtually aprotic conditions, as detd. through cyclic voltammetry, are in turn related to those of the diacetylated deriv. 3a: 2,2'-diacetyl-9,9'-spirobifluorene and the tri- and tetra-acetylated spirobifluorenes are the first examples of spiro compds. bearing multiple redox-active substituents.

IT **192565-89-2**
(stereoisomers; prepn. by controlled potential electrolysis of diacetylspirobifluorene on glassy carbon in DMF contg. acetic acid)

RN 192565-89-2 ZCAPLUS
CN Ethanone, 1,1'-[(1,2-dihydroxy-1,2-dimethyl-1,2-ethanediyl)bis(9,9'-spirobi[9H-fluorene]-2',2-diyl)]bis- (9CI) (CA INDEX NAME)



IT **192565-90-5P**
(stereoisomers; prepn. by electrochem. redn. of diacetylspirobifluorene on glassy carbon in DMF contg. acetic acid)
RN 192565-90-5 ZCAPLUS
CN 9,9'-Spirobi[9H-fluorene]-2,2'-dimethanol, .alpha.-[1-hydroxy-1-[2'-(1-hydroxyethyl)-9,9'-spirobi[9H-fluoren]-2-yl]ethyl]-.alpha.,.alpha.'-dimethyl- (9CI) (CA INDEX NAME)



IT **192565-89-2**
(stereoisomers; prepn. by controlled potential electrolysis of diacetylspirobifluorene on glassy carbon in DMF contg. acetic acid)
IT **192565-90-5P**
(stereoisomers; prepn. by electrochem. redn. of diacetylspirobifluorene on glassy carbon in DMF contg. acetic acid)

L8 ANSWER 5 OF 5 ZCAPLUS COPYRIGHT 2002 ACS
1994:163140 Document No. 120:163140 Electrochemistry of 9,9'-spirobifluorene derivatives: 2-acetyl- and 2,2'-diacetyl-9,9'-spirobifluorene. Preparation of stereoisomeric 2,3-bis(9,9'-spirobifluoren-2-yl)butane-2,3-diols. Mattiello, Leonardo; Rampazzo, Liliana (Univ. Roma 'La Sapienza', Rome, 00161, Italy). Journal of the Chemical Society, Perkin Transactions 2: Physical Organic Chemistry (1972-1999) (11), 2243-7 (English) 1993. CODEN: JCPKBH. ISSN: 0300-9580. OTHER SOURCES: CASREACT 120:163140.
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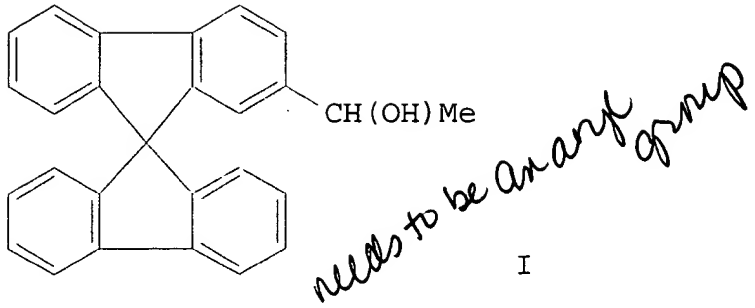

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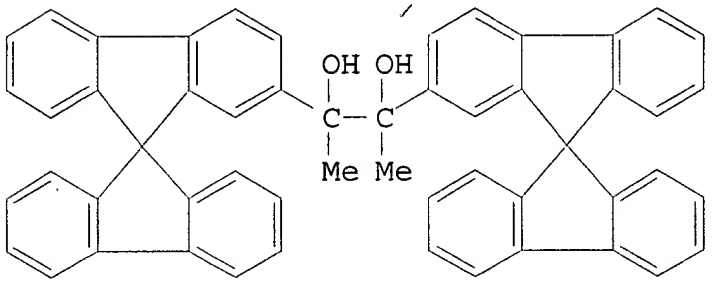


II

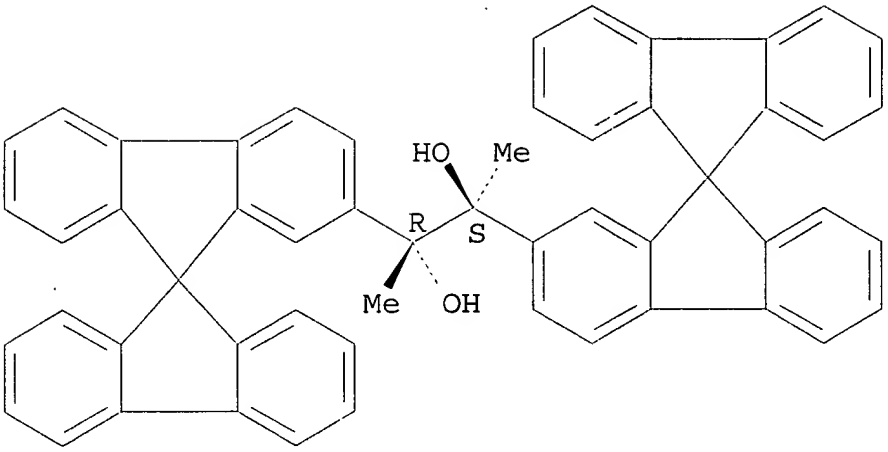
AB 2-Acetyl- and 2,2'-diacetyl-9,9'spirobifluorene 1 and 2 were studied by cyclic voltammetry in DMF. The corresponding anion radicals show remarkable persistency in aprotic DMF. The (apparent) std. potentials are E.degree. = -1.77 V (SCE) and E.degree. = -1.75 V for the (quasi-reversible) redn. of 1 and 2 to the anion radicals, resp. Preparative electrolysis of 1 in DMF-Et4NClO4 (0.1 mol dm-3), with excess acetic acid as proton donor, furnished alc. I and the diastereoisomeric pinacols [meso- and (.+-.)-II], which were isolated and characterized. The diastereoisomeric excess,de, as evaluated (NMR) or the electrolyzed soln. was only slightly in favor of the (.+-.) compd. Spectroscopic properties of compds. 1,2, I-II are, inter alia, the 13C NMR chem. shift for the spiro-carbon at .delta. = 65.9 (TMS), and the fragmentation patterns in the mass spectra, with the 100% relative abundance of the mol.-ion M.bul.+ in the case of the arom. ketones 1 and 2. Some comments on the influence of conformations of meso- and (.+-.)-II and the presence of an intramol. hydrogen-bond. in some intermediates and products are also presented.

IT **153335-20-7P 153335-21-8P**
(prepn. of)

RN 153335-20-7 ZCAPLUS

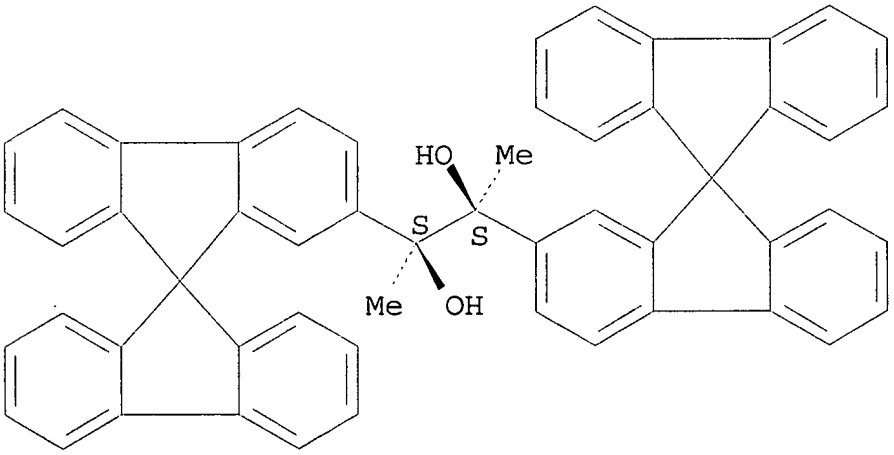
CN 2,3-Butanediol, 2,3-bis(9,9'-spirobi[9H-fluoren]-2-yl)-, (R*,S*)-(9CI) (CA INDEX NAME)

Relative stereochemistry.



RN 153335-21-8 ZCAPLUS
CN 2,3-Butanediol, 2,3-bis(9,9'-spirobi[9H-fluoren]-2-yl)-, (R*,R*)-(9CI) (CA INDEX NAME)

Relative stereochemistry.



IT **153335-20-7P 153335-21-8P**
(prepn. of)